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## Prevalence of Triple Negative Breast Cancer (TNBC) and Immunophenotyping in the Pathology Laboratory of Dr. Shariati Hospital in 2008-2012

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### ABSTRACT

Background: Triple-negative breast cancer (TNBC) has poor prognosis and moreover patients with TNBC do not benefit from established targeted drugs with endocrine therapy or trastuzumab. The aim of the study was to analyze the prevalence of candidate biomarkers in patients with TNBC. Methods: Descriptive and case-series study was conducted 586 patients with primary breast cancer were recruited from 2008 to 2012 at the Department of Pathology, Shariati Hospital; the diseases have been diagnosed or have been referred to this center for IHC. Results: Of 586 breasts cancer patients with a mean age of  $47.01 \pm 4.19$  by early IHC test for markers ER, PR, HER2neu were studied. The test indicated that 90 patients (15.35%) from three markers ER, PR, HER2neu were negative. 69 patients (76.6%) of 90 patients with TNBC for all three markers CK14, EGFR, 34 $\beta$ E12 were positive and labeled as basal-like. Mean age of TNBC group was  $35.5 \pm 2.12$  and was significantly different than Non-TNBC group  $48.1 \pm 3.11$  ( $P < 0.001$ ). Conclusion: Since basal-like breast cancers markers (CK14, EGFR, 34 $\beta$ E12) determining role in the prognosis and treatment of patients with breast cancer. We recommended For all primary breast cancer diagnosed as TNBC in primary evaluation, basal markers immunophenotyping should proceed.

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## INTRODUCTION

Breast cancer is the most common female cancer. It affects more than 1 million women worldwide and about 400,000 patients die due to this disease every year. The second most common cause of cancer deaths due to breast cancer [1]. Breast cancer is a heterogeneous disease, which can be characterized into clinically, morphologically and biologically different groups. There has been recent intense interest in the subset of breast cancer referred to as triple-negative breast cancer that lacks the expression of hormone receptors and HER2(cerbB2). Surgery and chemotherapy are the main methods for cancer treatment. Methods and specific targeted chemotherapy drugs in patients who require targeted receptors (ER, PR, HER2neu) a specific response of cancer cells to chemotherapy. Triple-negative breast cancer has more aggressive clinical behavior [2-5] distinctive metastatic patterns [6-7] and poor prognosis (7, 8). Triple-negative breast cancer accounts for 10–17% of all breast carcinomas depending on thresholds used to define estrogen receptor (ER) and progesterone receptor (PR) positivity, as well as methods and criteria for HER2 assessment [8-13]. This group is very important to identify clinically because in this group, routine chemotherapy is of no use. Efforts have been made to identify more accurately the group that led to the identification of subgroups of breast cancer such as basal-like which is important in terms of prognosis [1].

However, no information is available about this important group in Iran. In the first step, the prevalence of TNBC in an academic referral center for patients of breast cancer throughout the country in order to determine the immunohistochemical evaluation plan will be submitted to chemotherapy, it seems logical. Accurate detection and determination of this group basal, great value for clinicians in order to provide accurate and effective chemotherapy will follow.

Our study aimed prevalence triple-negative breast cancer and basal-like breast cancers in our population.

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## MATERIALS AND METHODS

The study was descriptive and Case-series. The study population included all patients with breast cancer between 2008 and 2012 in the Department of Pathology, Shariati Hospital, Tehran, disease has been diagnosed, or are referred to this center for IHC. As to the conducted of breast cancer specimens referred to the Department of Pathology, Shariati Hospital between 2008 and 2012 to investigate the primary IHC for ER, PR, HER2neu. Among them samples of markers ER, PR, HER2neu be negative (TNBC), prevalence was determined. Then CK14, EGFR, 34 $\beta$ E12 used to identifying subgroups of basal-like breast cancers. Finally, all the results evaluated using the descriptive indicators and T-test (comparison of age) by statistical software SPSS 19.

### Results:

Of 586 breasts cancer patients with a mean age of 47.01  $\pm$ 4.19 by early IHC test for markers ER, PR, HER2neu were studied. The test indicated that 90 patients (15.35%) for three markers ER, PR, HER2neu were negative. with an average age of 35.5  $\pm$  2.12. Then 3 markers of CK14, EGFR, 34 $\beta$ E12 with 100% sensitivity and 78% specificity in identifying basal-like subgroups f breast used, showed that 69 patients (76.6%) for the three marker CK14, EGFR, 34 $\beta$ E12 were positive.(Table 1)

**Table 1:** Frequency distribution and percentage is basal-like breast cancers markers in 90 patients with TNBC.

Basal marker	Positive Frequency (%)	Negative Frequency (%)	Total Frequency (%)
34 $\beta$ E12	(81.11)73	(18.89)17	(100)90
EGFR	(77.78)70	(22.22)20	(100)90
CK14	(77.78)70	(22.22)20	(100)90

Mean age of TNBC group was 35.5  $\pm$ 2.12 and was significantly different than Non-TNBC group 48.1  $\pm$ 3.11 ( $P < 0.001$ ).

### Discussion:

According to the results it can be seen that the average age of patients was 47.01 years of age is slightly lower than the numbers listed in the references. [14] Total of 586 patients, 90 cases (15.35%) of the markers ER, PR, HER2neu were negative (TNBC). The prevalence of TNBC with countries such as Japan [15] Korea [16] are almost compatible. But other studies is inconsistent with the present study [1]. In Review of TNBC basal-like breast cancers markers CK14, EGFR, 34 $\beta$ E12 showed that 76.6% (69 out of 90 patients) were positive for these markers. Thike *et al* study was consistent with these results, so that the study of the prevalence of these markers in patients with TNBC, 70 percent is shown [1]. Overall since basal-like breast cancers markers (CK14, EGFR, 34 $\beta$ E12) determining role in the prognosis and treatment of patients with breast cancer. We recommended For all primary breast cancer diagnosed as TNBC in primary evaluation, basal markers immunophenotyping should proceed.

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